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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,357	12/21/2001	Robert T. Mason JR.	ABME-0739/E20010060	6443

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Lawrence A. Aaronson, Esq.
WOODCOCK WASHBURN LLP
One Liberty Place - 46th Floor
Philadelphia, PA 19103

EXAMINER

FAN, CHIEH M

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 03/13/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/037,357

Applicant(s)

MASON ET AL.

Examiner

Chieh M Fan

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 December 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2,3.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 100 and 120 (see section 00017). A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance. The applicants are also encouraged to review the Fig. 1 because there are two blocks labeled "1st IF Amp 132".

Specification

2. The disclosure is objected to because of the following informalities: "data slicer 128" in section 00019, line 7 should be "data slicer 13".

Appropriate correction is required.

Claim Objections

3. Claims 1-20 are objected to because of the following informalities:
Regarding claims 1-12, "comprise" in line 8 should be "comprises".

Regarding claim 13-20, "communicate" in line 10 of claim 13 should be "communicates" and "comprise" in line 10 of claim 13 should be "comprises".
Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 5 and 14 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Although the applicants indicated in the last two lines of section 00030 of the specification that "in accordance with this aspect of the invention, some data channels could be missed and/or corrupted and all the data can be received on the other data channels", the examiner does not think the description of the specification would guarantee that the receiver can receive the entire data message when at least one of the data channel is blocked by interference as claimed. The applicants are referred to Fig. 2 and the description associated with Fig. 2 in the disclosure of the instant application. In the case of seven data channels, although each byte of the data is transmitted three or four times, there is no guarantee that each byte of the data would

be received. For example, when channels 1, 3, 5 and 7 are corrupted, it is clear bytes 1-11 will not be received. When channels 1, 3 and 5 are corrupted, bytes 2-11 will not be received. The specification of the instant application never teaches how to prevent such situations. Furthermore, claims 5 and 14 recite, "... when at least one of the data channels is blocked by interference", which certainly includes the situation that all of the data channels are blocked. Under such situation, no data will be received.

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 6-11 and 15-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 6 and 15 recite the limitation "transmitting a preamble over a preamble channel" in line 1. There is insufficient antecedent basis for this limitation in the claim. It appears that the limitation should be changed to "transmitting a preamble over a predetermined number of preamble channels". Further, since the limitation "transmitting a preamble over a preamble channel" transmits only one preamble in only one preamble channel. It is not clear how such limitation would further comprise "transmitting a redundant preamble over a second preamble channel". Still further, it appears that the limitations "the first preamble" and "the second preamble" in claims 7-11 and 16-19 should be changed to "the preamble" and "the redundant preamble", respectively.

8. Claims 13-20 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 13 recites the limitation "the predetermined number of times each bytes of the data message is to be transmitted" in the last two lines. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1, 2, 4, 6-8, 10 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eder (US Patent 5,311,542, provided by the applicants in IDS filed 2/15/02, PTO Paper #2) in view of Agee (US Patent 6,128,276).

Regarding claim 1, Eder teaches a frequency hopping spread spectrum system wherein segments of a data message are broken into 20-bit segments. Each of the segments is transmitted over a different carrier signal within a frequency range of 902 to 928 (col. 5, lines 28-34). Fig. 1 of Eder shows the message format comprises five

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successive segments in time. Each segment has a time duration portion for transmitting a preamble and a time duration portion for transmitting data message (also see col. 4, lines 11-36).

Eder does not teach the preamble and/or the data message are transmitted a predetermined number of times.

Agee teaches supplying the receiver with several duplicates of the original signal, but over channels that fade independent from one another, has the potential of securing continuous communication. When the same information is transmitted over several carrier channels is called frequency diversity. When the same information is transmitted several times is called time diversity (col. 1, lines 24-34). Diversity transmission combined with frequency hopping spread spectrum is used for protection against multipath fading and partial-band jamming (col. 2, lines 2-4).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit several duplicates of the preamble and/or the data message in the frequency hopping spread spectrum system of Eder, as taught by Agee, so as to improve the reliability of communication. Further note that, when the data message is redundantly transmitted several times, the total number of bytes transmitted is equal to the number of bytes in the data message times the number of times of transmission. Then the number of bytes in each carrier channel will be equal to the total number of bytes divided by the number of carrier channels.

Regarding claim 2, Eder also teaches the preamble is transmitted over a predetermined number of preamble channels for a period of time sufficient in duration

such that a receiver may receive the preamble (see the message format in Fig. 1 and col. 3, lines 11-17).

Regarding claim 4, Eder further teaches each of the predetermined number of preamble channels is associated with a predetermined number of data channels (see the message format in Fig. 1, also see col. 4, lines 11-36).

Regarding claim 6, as described above in claim 1, Eder in view of Agee teaches transmitting the preamble several times to improve the reliability.

Regarding claim 7, when the preamble is transmitted several times as taught by Eder in view of Agee, it is inherent that the receiver will be configured to receive each duplicate of the preamble.

Regarding claim 8, if only one preamble is received, it is inherent that the receiver has to process the data message based on the information obtained from the sole preamble received.

Regarding claim 10, Eder also teaches the preamble is transmitted over a predetermined number of preamble channels for a period of time sufficient in duration such that a receiver may receive the preamble (see the message format in Fig. 1 and col. 3, lines 11-17).

Regarding claim 11, Eder further teaches each of the predetermined number of preamble channels is associated with a predetermined number of data channels (see the message format in Fig. 1, also see col. 4, lines 11-36).

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11. Claims 3 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Eder in view of Agee as applied to claims 1, 2, 4, 6-8, 10 and 11 above, and further in view of Propp et al. (US Patent 5,944,842).

Eder in view of Agee, as described above, teaches the claimed invention including that the preamble is utilized to develop bit timing and hop frequency (col. 3, lines 10-26), but fails to teach that the preamble is concluded with a unique stop character.

The use of a unique character to indicate the end of the preamble so as to separate the preamble and the data message is well known in the art. Propp et al. teaches that, in a spread spectrum system (col. 4, lines 10-12), the use of end of sync character to indicate the end of the preamble (12 in Fig. 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use a unique character to indicate the end of preamble in the system of Eder in view of Agee, so as to separate the preamble and the data message.

12. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Eder in view of Agee as applied to claims 1, 2, 4, 6-8, 10 and 11 above, and further in view of Sanderford, Jr. (US Patent 5,311,541, provided by the applicants in IDS filed 2/15/02, PTO Paper #2).

Eder in view of Agee, as described above, teaches the claimed invention but fails to teach the frequency hopping spread spectrum system is within a utility metering

equipment. Sanderford, Jr. teaches a frequency hopping spread spectrum transceiver may be used in remote power meter reading (col. 2, line 13).

It is well known that the use of a frequency hopping spread spectrum system has the advantage such as reduce the effect of interference. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the system of Eder in view of Agee in remote utility meter reading, as taught by Sanderford, Jr., so as to reduce the effect of interference, and consequently to get a more accurate reading.

13. Claims 13 and 15-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderford, Jr. (US Patent 5,311,541, provided by the applicants in IDS filed 2/15/02, PTO Paper #2) in view of Eder (US Patent 5,311,542, provided by the applicants in IDS filed 2/15/02, PTO Paper #2) and Agee (US Patent 6,128,276).

Regarding claim 13, Sanderford, Jr. discloses a transceiver (106 in Fig. 1) of a frequency hopping spread spectrum system. The transceiver comprises a microcontroller (201 in Fig. 2A), a transmitter comprising a VCO (207 in Fig. 2A) and a power amplifier (212 in Fig. 2A), and a receiver comprising an amplifier (302 in Fig. 3), a mixer (303 in Fig. 3), a demodulator and a data slicer (310, 316 in Fig. 3, note that an FSK detector inherently comprises a slicer). Sanderford, Jr. also teaches the each data transmission is proceeded by a preamble (col. 4, lines 3-7).

Sanderford, Jr. does not teach that (1) an IF amplifier in the receiver, (2) the transmitter communicates group of data bytes that each comprise a subset of data

message over a predetermined sequence of data channels, and (3) the preamble and/or the data message are transmitted a predetermined number of times.

With respect to item (1), the use of an IF amplifier in a receiver is well known in the art to improve the signal quality. Eder teaches the use of an IF amplifier in a frequency hopping spread spectrum system (244 in Fig. 4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use an IF amplifier at the receiver to improve the signal quality.

With respect to item (2), Eder teaches a frequency hopping spread spectrum system wherein segments of a data message are broken into 20-bit segments. Each of the segments is transmitted over a different carrier signal within a frequency range of 902 to 928 col. 5, lines 28-34). Fig. 1 of Eder shows the message format comprises five successive segments in time. Each segment has a time duration portion for transmitting a preamble and a time duration portion for transmitting data message (also see col. 4, lines 11-36). By dividing the data into segments and transmitting each segment over a different carrier frequency would reduce the effect of interference (a well known advantage of frequency hopping). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit group of data bytes that each comprise a subset of data message over a predetermined sequence of data channels in the system of Sanderford, Jr., so as to reduce the effect of the interference.

With respect to item (3), Agee teaches supplying the receiver with several duplicates of the original signal, but over channels that fade independent from one

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another, has the potential of securing continuous communication. When the same information is transmitted over several carrier channels is called frequency diversity. When the same information is transmitted several times is called time diversity (col. 1, lines 24-34). Diversity transmission combined with frequency hopping spread spectrum is used for protection against multipath fading and partial-band jamming (col. 2, lines 2-4). Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to transmit several duplicates of the preamble and/or the data message in the frequency hopping spread spectrum system of Eder, as taught by Agee, so as to improve the reliability of communication. Further note that, when the data message is redundantly transmitted several times, the total number of bytes transmitted is equal to the number of bytes in the data message times the number of times of transmission. Then the number of bytes in each carrier channel will be equal to the total number of bytes divided by the number of carrier channels.

Regarding claim 15, as described above in claim 13, Sanderford, Jr. in view of Eder and Agee teaches transmitting the preamble several times to improve the reliability.

Regarding claim 16, when the preamble is transmitted several times as taught by Sanderford, Jr. in view of Eder and Agee, it is inherent that the receiver will be configured to receive each duplicate of the preamble.

Regarding claim 17, if only one preamble is received, it is inherent that the receiver has to process the data message based on the information obtained from the sole preamble received.

Regarding claim 18, Eder also teaches the preamble is transmitted over a predetermined number of preamble channels for a period of time sufficient in duration such that a receiver may receive the preamble (see the message format in Fig. 1 and col. 3, lines 11-17).

Regarding claim 19, Eder further teaches each of the predetermined number of preamble channels is associated with a predetermined number of data channels (see the message format in Fig. 1, also see col. 4, lines 11-36).

Regarding claim 20, Sanderford, Jr. teaches the frequency hopping spread spectrum transceiver may be used in remote power meter reading (col. 2, line 13).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chieh M Fan whose telephone number is (703) 305-0198. The examiner can normally be reached on Monday-Friday 8:00AM-5:30PM, Alternate Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on (703) 305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4750.


Chieh M Fan
Examiner
Art Unit 2634

cmf
March 8, 2003